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Υ measurements in $\{itp\} + \{itp\}$ collisions at $\sqrt{s} = 500 \text{ GeV}$ with the STAR experiment

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Studies of quarkonium production in heavy-ion collisions can provide insight into thermodynamic properties of the quark-gluon plasma (QGP). Suppression of Υ states is expected at a sufficiently high temperature in the QGP and can be measured using the nuclear modification factor $R_{\{AA\}}$. Measurements of p_T spectra for separate Υ states in $\{itp\} + \{itp\}$ collisions provide constraints for models of the quarkonium production, which is an important factor in the interpretation of the heavy-ion results. In addition, high quality data from $\{itp\} + \{itp\}$ collisions at $\sqrt{s} = 500 \text{ GeV}$ can be used as a baseline for $R_{\{AA\}}$ as a function of p_T in $\{itAu\} + \{itAu\}$ collisions at $\sqrt{s} = 200 \text{ GeV}$, after rescaling to lower energy. Also, studies of ratios of Υ states as a function of event multiplicity may help better understand the interactions with hadronic co-movers, because the higher states have larger geometrical sizes and thus should have larger cross section for such interactions compared to $\Upsilon(1S)$.

In this poster, we will focus on experimental aspects and report the preliminary results of Υ measurements in $\{itp\} + \{itp\}$ collisions at $\sqrt{s} = 500 \text{ GeV}$ with the STAR experiment. Furthermore, the prospects of Υ measurements with the newly installed Muon Telescope Detector (MTD) will be discussed.

On behalf of collaboration:

STAR

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